AMSAT News Service Weekly Bulletins
Issue: ANS-099
Date: 2012-04-08
Sources: amsat-ans-2012-ans-099-weekly.txt

AMSAT NEWS SERVICE
ANS-099

ANS is a free, weekly, news and information service of AMSAT North America,
The
Radio Amateur Satellite Corporation. ANS reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in
designing, building, launching and communicating through analog and digital
Amateur Radio satellites.

Please send any amateur satellite news or reports to:

ans-editor@amsat.org

****
* Volunteers are needed to help at the AMSAT booth at Dayton. Gould *
* WA4SXM, is looking for volunteers to help man the AMSAT booth dur- *
* ing the 2012 Hamvention. People are needed all 3 days for 2 hour *
* shifts. Please send the days and times you are available to help *
* as well as how many shifts you are willing to work via e-mail to *
* wa4sxm at amsat.org. *
* Monitor http://www.amsat.org/amsat-new/hamvention/2012/Dayton.php *
* for the latest AMSAT at Dayton news and developments *
****

In this edition:
* Fox-1 Project Educational Goals Align With NASA ELaNa Requirements
* AMSAT-NA Board of Directors Nominations
* EPFL Announces Nanosat Ion Drive - To The Moon on 100 mL of Fuel
* European ATV-3 Edoardo Amaldi Arrives at ISS & Performs Reboost
* California Students Contact ISS Astronaut
* Satellite Shorts From All Over

SB SAT @ AMSAT $ANS-099.01
ANS-099 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 099.01
From AMSAT HQ SILVER SPRING, MD.
April 8, 2012
To All RADIO AMATEURS
BID: $ANS-099.01

Fox-1 Project Educational Goals Align With NASA ELaNa Requirements

Project ELaNa, NASA's "Educational Launch of NanoSat" managed by the Launch Services Program at the Kennedy Space Center, announced on February 10 that the AMSAT Fox-1 cubesat has been selected to join the program. AMSAT will work with NASA in a collaborative agreement where NASA will cover the integration and launch costs of satellites deemed to have merit in support of their strategic and educational goals.

In an article published in the AMSAT Journal, AMSAT Vice-President of Engineering, Tony Monteiro, AA2TX noted that meeting NASA's educational goals for Science, Technology, Engineering, and Math (STEM) was the cornerstone in the successful acceptance of Fox-1 into the ELaNa project.

Fox-1 continues AMSAT's long record of success as an all-volunteer organization providing access to space communications for students in a curriculum setting as well the private citizen.

The Fox-1 communication package provides a learning and techological stepping-stone using commonly available amateur radio equipment. Students gain first-hand experience in setting up and operating equipment, orbital prediction, communication to distant places, and growth in overall space literacy. In the classroom, Fox-1 will allow schools, teachers, and students to actively participate in space technology with a unique experimental hands-on learning approach that includes communicating through a satellite in orbit.

All of the Fox-1 experiment and telemetry data will be collected and stored on our internet server and made publicly available for use in the classroom and shared with the CubeSat community.

In addition to mentoring university student cubesat mission teams, AMSAT satellites have also hosted university experiments aboard our spacecraft. In addition to the communications package, Fox-1 will host an experimental payload developed as a capstone project at Penn State University. The Penn State project will have impact on future CubeSat systems as the students design, construct, and orbit an attitude experiment based on a 3-axis micro-electro-mechanical gyroscope.

Fox-1 Project Reviews

The Fox-1 Team participated in a Merit Review and Feasibility Review with a panel including education and industry experts at the Doctorate level, a developer of 29 satellites, and directors of research.

The results of the Fox-1 Merit Review found:

+ AMSAT "nailed" the NASA education requirements of the NASA Education Strategic Coordination Framework and the NASA Education Implementation Framework. In fact, AMSAT has a history of space education that pre-dates most university programs.

+ The Fox-1 program will be accessible to an entire classroom or school with only the teacher or outside volunteer requiring an amateur radio license.

+ The archive of telemetry data collected during actual space flight will prove valuable in future educational projects that have yet to be imagined.

The results of the Fox-1 Feasibility Review found:

+ While AMSAT relies on an all-volunteer development team the tremendous depth and experience of the Fox-1 team far exceeds the capability of a typical CubeSat team. AMSAT has developed its satellites this way for 40 years and has never missed a launch.

+ AMSAT does not rely on critical technology for flight and leverages our experience from prior successful missions:

  o Fox-1 is designed to operate in sunlight without batteries

once the battery system fails. This applies lessons learned from AO-51 and ARISSat-1 operations.

- In case of IHU failure Fox-1 will continue to operate its FM repeater in a basic, 'zombie sat' mode, so that the repeater remains on-the-air.

- Fox-1 is designed as the immediate replacement for AO-51. Its U/V (Mode B) transponder will make it even easier to work with modest equipment.

- From the ground user's perspective, the same FM amateur radio equipment used for AO-51 may be used for Fox-1.

AMSAT's Fox-1 project timeline is based on targeting a launch in the second half of 2013. NASA will determine on which flight each of the Project ELaNa CubeSats fly. They have updated their CubeSat Launch Initiative web page including AMSAT's participation at: http://www.nasa.gov/directorates/heo/home/CubeSats_initiative.html

[ANS thanks the Fox-1 Team for the above information]

AMSAT-NA Board of Directors Nominations

It is time to submit nominations for the upcoming open seats on the AMSAT-NA Board of Directors. A valid nomination requires either one current Member Society, or five current individual members in good standing, to nominate an AMSAT-NA member for the position.

Three directors and two alternate directors have terms expiring this year. The director seats open for election are held by Tom Clark, K3IO; Lou McFadin, W5DID; and Gould Smith, WA4SXM. The alternate director seats open for election are held by Mark Hammond, N8MH and Patrick Stoddard, WD9EWK.

The three nominees receiving the highest number of votes will be seated as regular board members with two year terms. The two nominees receiving the next highest number of votes will be seated as alternate directors for one year.

Written nominations, consisting of names, calls and individual signatures, should be mailed to: AMSAT-NA, 850 Sligo Ave #600, Silver Spring, MD, 20910. They must be received no later than June 15th. No other action is required.

Nominations may also be made by electronic means including e-mail, FAX, or electronic image of a petition. Electronic petitions should be sent to MARTHA@AMSAT.ORG or faxed to 301-608-3410, and also must be received by June 15th. If using any electronic submission, there is a second, verifying step:

ELECTRONIC SUBMISSIONS WITHOUT THIS SECOND, WRITTEN VERIFICATION ARE NOT VALID UNDER THE EXISTING AMSAT-NA BYLAWS. A verifying traditional written petition MUST be received at the AMSAT-NA office at the above address within 7 days following the close of nominations.

[ANS Thanks AMSAT Secretary Alan Biddle, WA4SCA for the above information]

EPFL Announces Nanosat Ion Drive - To The Moon on 100 mL of Fuel

An article posted on space-travel.com reported the EPFL University in Switzerland announced the first prototype of a new, ultra-compact motor that will allow small satellites to journey beyond Earth's orbit. (See: http://tinyurl.com/EPFL-IonMotor)

EPFL said the MicroThrust ion motor will be capable of reaching the Moon using just a tenth of a liter of fuel. The complete thruster weighs just a few hundred grams and is specifically designed to propel small (1-100 kg) satellites, which it enables to change orbit around the Earth and even voyage to more distant destinations - functions typically possible only for large, expensive spacecraft.

Instead of a combustible fuel, the new mini motor runs on an "ionic" liquid, in this case the chemical compound EMI-BF4, which is used as a solvent and an electrolyte. It is composed of electrically charged molecules (like ordinary table salt) called ions, except that this compound is liquid at room temperature. The ions are extracted from the liquid and then ejected by means of an electric field to generate thrust. This is the principle behind the ionic motor: fuel is not burned, it is expelled.

After six months of acceleration, the microsatellite's speed increases from 24,000 km/h, its launch speed, to 42,000 km/h. The acceleration is only about a tenth of a millimeter per square second, which translates into 0-100 km/h in 77 hours. But in space, where there is no friction to impede motion, gentle but steady acceleration is the way to go.

"We calculated that in order to reach lunar orbit, a 1-kg nanosatellite with our motor would travel for about six months and consume 100 milliliters of fuel," explains Muriel Richard, a scientist in EPFL's Swiss Space Center.

A video about the MicroThrust has been posted at:
http://www.youtube.com/watch?feature&#65533;ayer_embedded&v&#65533;lSI_l5g4M

[ANS thanks Space-Travel.com for the above information]

European ATV-3 Edoardo Amaldi Arrives at ISS & Performs Reboost

After a successful launch on March 23, the heaviest cargo ship ever has arrived and docked to the International Space Station. The 20-ton European ATV-3 cargo ship, named "Edoardo Amaldi" after the Italian physicist and spaceflight pioneer, made a "smooth and gentle" docking on March 28. It delivered 7 tons of food, drinking water, clothing, oxygen, spare parts and fuel for the 6-member ISS crew.

A video of the docking with ISS can be viewed at:
http://www.youtube.com/watch?feature&#65533;ayer_embedded&v&#65533;rM-1F4jdo

On Saturday, March 31 the ATV reboosted the space station's orbit to 389.8 km. The ATV's thrusters ran for 351 seconds, increasing ISS velocity by 1.0 m/s and boosting average altitude by 1.73 km. This is a standard test performed as soon as possible after docking.

The successful test burn means that ATV is ready for a series of larger planned reboosts (the first expected on 5 April) and to conduct debris avoidance manoeuvres when necessary.

Read more on-line at:
http://tinyurl.com/ISS-ATVBoost1 (space-travel.com)
http://tinyurl.com/ISS-ATVBoost2 (space-travel.com)

An article posted on spaceflightnow.com on April 2 reports that the huge cargo freighters, weighing more than 20 tons fully loaded, will stop flying in 2014 when the fifth resupply craft delivers equipment to the International Space Station. ESA member states decided to discontinue the program after briefly considering redesigning the throw away cargo craft to return hardware in a hardened re-entry capsule.
Read the full article on-line at:
http://spaceflightnow.com/news/n1204/02atvfuture/

The ESA published a new video on their youtube channel showing ESA astronaut Andr? Kuipers and cosmonaut Oleg Kononenko opening the hatch to the ATV and begin unloading the cargo. See:
http://www.youtube.com/watch?feature?ayer_embedded&v?RrisDldqM

[ANS thanks Space-Travel.com and SpaceFlightNow.com for the above information]

California Students Contact ISS Astronaut

The amateur radio club at California Polytechnic State University, San Luis Obispo, California arranged for an Amateur Radio on the International Space Station (ARISS) contact for elementary school students, 4H-club members and Scouts on Tuesday, March 27. The connection was made by telebridge station AH6NM in Hawaii.

Approximately 150 students were in attendance. Local news station KSBY and the Cal Poly newspaper Mustang Daily covered the event; NASA-TV replayed the contact audio on March 28. The ARISS event complemented the science fair held to get students interested in Science, Technology, Engineering and Mathematics (STEM). To view the article, see:
http://mustangdaily.net/radio-club-makes-contact-with-international-space-
station/

and the news clip:
http://www.ksby.com/videos/cal-poly-connects-with-outer-space/

[ANS thanks Carol, KB3LKI, for the above information]

Satellite Shorts From All Over

+ Education and Technology Program Director Mark Spencer, WA8SME will try to activate W1AW on AO-27 on April 10 for the 1830Z pass. Fastest QSL is via his callbook address.

+ The 50 MHz and Up Group has issued the first call for papers for the 2012 Microwave Update Conference to be held October 18-21 in

Santa Clara, California. For more information on submitting papers as well as all other aspects of the conference please go to: http://www.microwaveupdate.org

+ The International Space Station Benefits for Humanity brochure is a collection of in-depth descriptions about benefits from research on the space station. The benefits outlined serve as examples of the space station's potential as a ground breaking scientific research facility. This collection was developed collaboratively by the members of the Canadian Space Agency, European Space Agency, Japan Aerospace Exploration Agency, NASA and the Russian Federal Space Agency. To view the brochure, visit http://tinyurl.com/NASA-Brochure (nasa.gov)

+ A NASA Educator's Guide about Rockets is available on-line at: http://tinyurl.com/NASAForEducators (nasa.gov)

+ Bob, WB4APR noted a need for an Australian Amateur Astronomer and HAM operator in Canberra on 4-6 June 2012. Assistance is needed to support a science team of students from the USA to observe the last transit of Venus this century in Canberra. We want a local Australian Ham to be there to see if we can use ham radio and the speed of light to share observations with our sister team in Japan (and any other observation sites). Interested individuals for this historic event, contact WB4APR@amsat.org

+ Tom Medlin, W5KUB, known for his live webcasts from the Dayton Hamvention and Huntsville Hamfest will also broadcast from the Memphis FreeFest on Saturday, April 14 between 0900-1500 CDT (UTC-5). Tom says, "This is a small hamfest but we will have a few prize drawings during the broadcast. All you need to enter the drawing is to be in our chatroom when the drawings are announced." The internet video feed and the chatroom can be found at: http://w5kub.com. This page streams previously recorded video from Dayton when live broadcasts are not airing.

+ The next Hudson Valley Satcom net date is Thursday, April 12 at 8:00 PM EDT (UTC -4) on the 146.970 MHz repeater, and also on the N2EYH-L Echolink node. More info: http://www.hvsatcom.org/ (via Stu, WA2BSS)

[ANS thanks everyone for the above information]

/EX

In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive additional benefits. Application forms are available from the AMSAT Office.

Primary and secondary school students are eligible for membership at one-half the standard yearly rate. Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status. Contact Martha at the AMSAT Office for additional student membership information.

73,
This week's ANS Editor,
Lee McLamb, KU4OS